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## THE ADVANTAGES OF STATE REGULATION

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The policy of regulating private economic enterprises through the agency of government is as old as the common law. The common law represents the prevailing public opinion which in turn is influenced by the ideals of the period. Public opinion, however, has always demanded that government protect equally against those forces which threaten life as well as those which threaten the means of living. During the Middle Ages the policy of regulating economic activity was general and comprehensive. During modern times the policy has largely been reversed. Competition is now depended upon to regulate prices and conditions in practically all undertakings except those which, like public utilities, are monopolistic in their nature and which furnish necessary service. In the case of such utilities public welfare demands that the government shall step in and furnish such protection as may be needed. The government regulation which is implied in such protection, in order to be both effective and reasonable, must be adjusted to the nature of the service and the conditions under which it is furnished.

The power to thus regulate is vested in the sovereign, or under our form of government, in the state. State regulation of this kind may take the form of specific legal provisions alone or it may take the form of such laws administered by a state commission. The state may also delegate the duties and work of such regulation to any of the various local units of which the state is composed, such as cities, villages, etc. When such regulation is so delegated to the local units it may take the form of franchise or ordinance provisions alone, or may consist of such provisions administered by a local commission or department.

The purpose of such regulation is to see to it that the public is adequately served at reasonable rates, without unjust discriminations, and that the securities issued are as closely as possible adjusted to the amounts necessarily and properly invested. The regulation of such security issues is of such a nature however that it probably need not be discussed here.

That service is usually regarded as adequate which conforms to certain standards which have been found to be reasonable or fair under the circumstances. Such standards for each class of utilities should be developed in the light of the state of the art and of the technical operating and other conditions involved.

Reasonable rates under normal conditions are rates that yield reasonable amounts for operating expenses including depreciation, and interest and profit on the fair value of the plant and the business. In other words, such rates must in the long run be high enough to cover the cost at which the factors of production can be had. The cost of these factors thus constitutes the cost of the service and is ordinarily the legal as well as the economic basis for the rates.

While it is generally admitted that governmental regulation of the services and rates of public utilities is necessary for the protection of the public, there are differences of opinion as to what form such regulation should take. Some prefer state regulation through a commission; others again hold that such regulation should be entrusted to the municipality actually served by the utilities. In order to pass upon this question it would seem to be necessary to know how such regulation can be most effectively, most equitably and most economically performed. My purpose here simply is to point out a few facts and conditions that may tend to throw some light upon these matters. In doing so I will briefly outline the nature of the duties involved, and call attention to a few of the leading features of the work that is required in properly performing these duties. If in doing so I shall seem to favor state regulation it is because the facts as I have found them point in this direction.

The injuries wrought by inadequate service may be as serious as those caused by unjust rates. Impure gas with less heating value than the rates justify, and on which the pressure is too low, is unprofitable to the user. In the electric service too high voltage may injure lamps and other equipment while too low voltage results in dim lights and poor service in other respects. Low pressure in the water service may result in serious losses through fires and in much other inconvenience. Insanitary water may be even more harmful. Defective telephone service with delays in answering calls results in wastes of time and other annoyances. This is also true of inadequate street railway service. Poor street railway service may even lead to undue congestion of population, especially in the

larger cities. This may also be said of failures to provide reasonable extensions of the service when needed.

Poor service is uneconomical, irritating and a fruitful source of dissatisfaction and complaint. It is often responsible for the greater part of the ill-feeling between the public and the utility that exists in so many places. Such service, however, can as a rule be furnished at lower cost by the utility than good service and it is in this fact that the incentive to poor service is found. To furnish inadequate service, especially when the rates charged are high enough to cover the cost of adequate service, is an unjust imposition upon the public. For the consumers are as much entitled to get what they pay for as the utilities are in charging reasonable rates for adequate service. Any other view would be unfair as well as inequitable.

In order that the utilities may be fully informed as to what is required of them in the way of service, state commissions have as a rule prescribed standards of adequacy for electric light, gas and telephone utilities, and conformity with these standards is in all cases enforced. In water works the service is not allowed to fall below a fairly definite level of efficiency. In the case of the standards of gas, electric and telephone service many state commissions have conducted extended investigations in order to obtain the facts and material necessary for an intelligent study of the matter. Not only the operating conditions of the utilities, but all of the technical and non-technical phases of the matter were looked into. Owners and operators of utilities, as well as experts and persons of experience not connected with such utilities, have been consulted at almost every step.

The Wisconsin commission's requirement for gas service is that the gas have a heating value of at least 550 British thermal units at all times, and a monthly average of at least 600 British thermal units. This gives a grade of gas which is high enough in heating value to be satisfactory for cooking, for mantle lights or for power, and at the same time is not too high to be manufactured efficiently. The pressure at which gas is furnished to the consumer at all times must be sufficient; the maximum pressure must never be more than twice the minimum. The commission also prescribes the amount of sulphur and sulphurated hydrogen which the gas may contain. Gas meters must be periodically tested by the gas company, and an error of more than 2 per cent must be corrected.

In the case of electric utilities, the standards require a voltage sufficiently constant so that the maximum shall never be more than 6 per cent higher than the minimum. Electric meters must be inspected at least once a year and tested at full load, half load and one-tenth load, and an error of more than 4 per cent on any load is not permitted to continue. Incandescent lamps must be inspected and the consumers must be given information as to the conditions under which their lighting installations can be used most efficiently.

In the case of telephone service, where delays in answering calls or making connections, poor transmission, frequent calling of wrong numbers, and other similar inadequacies of service are found, the telephone companies are required to make improvements which will result in elimination of the causes of complaint.

Inspection of water utilities covers such matters as adequacy of fire pressure, sufficiency of pressure for domestic users, purity of the water supply, accuracy of meters, and adequacy of the source of supply. Fire tests have been made in many cities, and have resulted either in the ordering of improvements in pressure or in assuring the citizens of the adequacy of their water works systems. In some cases, improvement in the sanitary quality of water has been effected through the commission's tests. Demands for the extension of water and other mains are investigated, and when the conditions with respect to their cost, probable earnings and the needs of the public are such as to warrant it, such extensions are ordered.

Another matter that has received much attention is the routing, loading, headway, the number of cars and other equipment that are needed under given conditions in order to provide adequate street railway service. Rules have been promulgated and practices established that have led to material improvements in the conditions.

In order to bring about such improvements in the service, however, it was necessary not only to prescribe proper standards and rules, but to provide for a permanent and constant supervision of the service. The state has been divided into districts with one or more inspectors in each who are competent and who are also properly equipped for testing the service. This work requires special training. The instruments required are sensitive, and the cost of the same for each inspector is not far from \$1,000.

Owing to frequent changes in conditions, however, service stand-

ards no matter how carefully they have been established are not long lived. The standards which were established by the Wisconsin commission were out of date and had to be greatly modified in a less time than five years from the time they were first issued. The changes in conditions which make such frequent alterations in the standards of service necessary can for the most part be traced to the adoption of new methods and new inventions, some of which are also quite far reaching. As a rule, however, they stand for improvements in the service and often at less cost.

Much is now claimed for local regulation of utilities, by the municipalities alone. Instances are pointed out where local regulation is said to be successful and many reasons are given why this form of regulation offers the best solution of the question. There are no doubt instances of successful local regulation. It is also probable that these instances will increase in number as time goes on. At the same time local regulation is beset with many obstacles that are inherent in the situation and that are difficult to overcome. That this is the case is shown by the history of such regulation as well as by the nature of the problems that are involved therein. To many who have given close attention to the matter it is far from clear that local regulation alone is adequate and in line with the best policy.

Franchise and ordinance provisions alone, especially when not accompanied by adequate provisions for their enforcement, seem to fall short of furnishing adequate regulation. Taken as a whole they appear to afford no better means for such regulation than has been the case for state legislation alone without a commission to enforce it.

Franchises are granted for long periods of years, and the provisions named therein are usually supposed to remain in effect throughout the entire life of the franchise. For conditions which remain constant, permanent provisions of this kind are undoubtedly proper, but for conditions which are frequently changing they may become burdensome and unjust to one side or the other. As the conditions upon which adequate service and reasonable rates depend are changing so often that the standards of service and the rate schedules frequently have to be revised as often as once every year or two, it is obvious that franchise provisions of this sort alone are not likely to furnish adequate regulation.

Franchises also as a rule contain so many other provisions of a contractual nature that the provisions therein which relate to service and rates do not often receive the consideration they merit. In fact the rules of service and the rate named therein are oftener based on rules and rates obtaining elsewhere than on facts disclosed by actual investigation of the conditions, including the cost of the service. This method of adopting rules and rates cannot often be proper and this for the reason that conditions as between different places usually vary so much that rates and rules that are reasonable for one place are not often reasonable for other places.

Of the franchises which were in effect in the state of Wisconsin at the time the public utility law was enacted, hardly one has been found which contained adequate provisions for the regulation of service and rates. The rules and rates named therein may have been reasonable at the time they were enacted, and they may even have remained so for some time afterwards, but they were wholly out of place at about the time the utility law went into effect, and had apparently been so for some time. These rules were not only out of date and inadequate but the rates were as a rule too high and unjustly discriminatory. These discriminations extended not only to the different branches of the service and to the different classes and to individuals in each branch, but were regularly found to exist between the municipality on the one hand and the private consumers on the other. While these provisions in the franchises neither were nor could be very closely adhered to, they were always regarded as a part of the contract and were effectively raised by the utility in service and rate controversies. They were also an obstacle to effective regulation. It was for these reasons mainly that the state of Wisconsin under its reserve power has declared unreasonable franchise provisions of this kind to be unlawful or void.

What has thus been said of franchise regulation would also seem to largely apply to such regulation as is afforded by municipal ordinances. It is true that the rules and rates named in such ordinances are sometimes based upon the opinion of experts who were employed to investigate these matters, and that they therefore may have been fair at the time they were enacted. But even if fair when enacted they are not likely to long remain so. Unless, therefore, some provision is made for making such changes in these rates and rates as are needed from time to time they will soon be out of line.

To make such changes is not always as important a task as is the task of making the original rates and schedules and yet it is too important in most cases to be left without supervision to the parties directly involved.

The cost of such special investigations as those which are necessary for this purpose, when made by others than a permanent state department, is also likely to be beyond the reach of at least the smaller cities. Such costs for plants that can be replaced for from \$2,000,000 to \$4,000,000 often amount to as much as from \$25,000 to \$50,000. Ordinances of this kind are as a rule tested in the courts, and not being defined by a properly equipped department are apt to be either set aside or the verdict delayed until their very purpose is defeated.

The chief objections to regulation by municipal ordinances are summed up by Judge McPherson in the Des Moines Water Case, 192, Fed. 193, who, in pointing out the shortcomings of this system of regulation, says:

It is now more than three years since the passage of this ordinance. This case illustrates the evils in connection with the fixing of rates by municipalities to govern public utility corporations, . . . by the time this case is decided by an appellate court, at least four years will have elapsed from the passage of the ordinance until the matter is put at rest by the courts . . . It is well known by all informed men that city councils necessarily adopt rates with but little or no investigation as to what rates ought to be fixed. The result is we have ordinances fixing rates based upon but little intelligent effort for the ascertainment of the facts. Some of the states . . . have state commissions of competent men, who give public hearings, and who do nothing behind doors, nor in secrecy—a commission with no member interested as a taxpayer of the city, and with no member subject to influences other than the ascertainment of the truth and the facts. Rates are thus fixed with which most fair minded people are ready to acquiesce. It is strange that we have no such legislation and no such commissions in Iowa.

When such ordinances are fair and properly adjusted to the conditions, however, and when in addition to this they are enforced by some local body with the necessary powers and equipment for this purpose as well as for making such changes in the rules and rates as become necessary from time to time, then they are also likely to furnish effective regulation. One objection to such a body is its cost. As pointed out above local commissions seem for this reason to be beyond the reach of all but the larger cities or units.



Such commissions would also be handicapped in their work because of the lack of financial, operating, and other data obtained on a uniform basis. It is also a question whether in most cases they could be given the necessary jurisdiction. As stated above, regulation of public utilities is essentially an undertaking that is adapted to centralized or coöperative methods.

That the necessity for regulation is not obviated when the utilities are owned and operated by the municipalities is quite clear from such experience as we have had in the matter. Such utilities furnish no better service than privately owned or operated utilities. In fact, it is often a great deal worse. Municipalities are as a rule slow in responding to new discoveries and improved methods and they often fail to properly list and supervise their meters and other equipment. Examinations of the inspectors' reports, at least in our state, reveal the fact that while some municipalities furnish good service, the service in the greater proportion of them is on the whole on a lower level than is the case for privately operated plants.

When it comes to rates, the situation for municipally operated utilities is no better. When the commission first entered upon its duties it found the state literally streaked with unjust discriminations of all kinds and these discriminations were as flagrant in municipally operated as in privately operated plants. While these discriminations have now been largely done away with, the task of wiping them out was also fully as great for the former class of plants as for the latter. The same is also true when it comes to establishing and to maintaining equitable rates. While the rates charged by the municipally operated plants are often relatively low, this lowness in the rates is not often due to low cost of production of the service, but largely because in one way or another upkeep and other costs are in one way or another shifted from the consumer as such to the taxpayer as such.

In the matter of accounting also the municipality is backward. In fact, the situation in this respect has been such that although the commission has done its best to bring order out of chaos, the progress it has made has been slow. In 1912 about 161 out of the 177 municipally owned water works and electric plants in the state failed to keep their accounts in such a way that they could be made to disclose the results of their operations. Over \$16,000,000 worth of property was represented by the plants which thus failed to keep

proper records. For this property and for its earnings from operations, and for the expenses incurred therein, the accounting was entirely inadequate.

Uniformity in policy in the application of principles and in obtaining information and facts is of the greatest importance in matters of a public nature such as the regulation of public utilities. The situation in this respect is about the same for regulation as for taxation. In the assessment of property for taxation it has been found that uniformity and justice could not be had from assessors employed and paid directly by those whose property was to be assessed. In order to secure uniformity in the assessment it has therefore been found necessary to delegate this work to state administrative bodies. The removal of assessors from local influence by having them appointed and paid by the state and responsible only to the people generally has given them that independence of judgment and action which alone can give an approach to equality and uniformity of taxation. The analogy to the power of regulation is surprisingly complete in this respect. Judiciousness is not a function of political activity or of personal wants and preferences. It is rather a function of painstaking and independent investigations. It requires a consideration of what is humanly possible. It demands financial or political disinterestedness. Fair hearings must be given to both sides. A mind to be judicial must be open and free. In passing upon public utility controversies, a city administration would often have to be both prosecutor and judge and the members of such administration would of necessity be personally interested in the service and rates involved. Such relations do not always lead to equitable conclusions and should therefore as far as possible be avoided.

In many cases the rates are found to be unreasonably high as well as unjustly discriminatory. Rates that are too high and that under similar conditions are higher for some persons and localities than for others are harmful and against public policy. They result in unequal distribution of wealth. They mean that money is unjustly transferred from one set of pockets to other sets of pockets, and that a few are enriched at the expense of the many. They retard industrial development and commercial growth, and, in the same line of business, tend to build up some at the expense of others.

Rates that are too low may also be harmful. They usually stand for poor equipment and poor service. When so low as not to provide means for the proper upkeep of the plant they may even lead to the entire ruin or loss of the service. Instances where conditions of this kind prevail are frequently met with. They are detrimental not only to those who are directly affected, but to the public as a whole. Losses from poor service may be as great as losses from rates that are too high or discriminatory.

In order to determine what constitutes reasonable charges for utility service it is necessary to determine the fair value of the property and business employed therein, and to ascertain what are fair allowances for interest, profits and depreciation on such valuation as well as what constitutes fair amounts for other operating expenses.

Among the facts and evidence which must be considered in arriving at the fair value of a utility's property are the original investment in the property as a whole as well as of that part of it which is now in use, the cost of reproducing the property new, the depreciation that has taken place in the physical property, the cost of establishing the business and the effect of extraordinary conditions such, for example, as a general decline and other changes in the community. Unless the valuation of the property is made with full consideration of all these lines of evidence it may not be fair nor stand the test of a court review.

To ascertain the original investment in the property as well as the actual cost of the items now in place requires the coöperation of trained accountants and engineers. Every item of expenditure must be carefully scrutinized. Expenses incurred for replacements must be segregated from those for extensions or the cost will be overstated. In many cases part of the cost for new plant has been charged to operating expense and unless these costs are fully determined the cost of the property will be understated. Numerous other irregularities are also met with which must be adjusted before the true cost can be found.

The work of ascertaining the cost of reproduction of the property and of the depreciation which has taken place therein is an engineering task. It requires complete inventories of the property, a careful pricing of each item, a determination whether the property is of such type and in such condition that it can be economically used, a determination of the amount of depreciation from a survey

of its cost new and its probable life, a determination of the sufficiency of repairs or upkeep and many other facts of similar character. The pricing of property would be practically impossible without the possession of complete and up-to-date lists of unit prices covering every conceivable item of utility property. In general, it may be said that the work divides itself into and requires about as many different kinds of skilled engineers as there are departments of the science of engineering.

In order to determine what has been the actual cost of building up the business or of the reasonable cost of reproducing the business under existing conditions it is necessary to get a complete financial history of the company from its books and records. There must be at hand full knowledge as to what have been reasonable returns in the past and what would be reasonable returns today. Data must be available showing how long it is normally required to reproduce a paying business, what is a fair relation of expenses to earnings at various stages of the development period. To have these facts requires the most painstaking analysis and continuous research.

When valuations are completed they are useful alike for rate making and capitalization purposes. They can be revised at a less expense and furnish a basis upon which future difficulties may be settled. What has been said about valuations and the service of engineers and accountants in connection with them applies alike to the rate-making and security-issuing functions.

In order to determine what are reasonable amounts for operating expenses it is necessary to know what these expenses have amounted to in the past, not only for the plant involved, but for other plants both similarly and dissimilarly situated. It requires a good general knowledge of the physical operations and what such work can ordinarily be done for. The efficiency of operation largely determines what the total revenues must be to meet the operating costs. Whether or not a particular utility is being operated efficiently is often indicated by comparison of its costs with those of other utilities producing the same product and operating under similar conditions.

How much should be included in the operating expenses for depreciation is a matter that largely depends on the cost and life of the property involved, the state of the art, how the amounts thus reserved may be used profitably until needed for renewals, and on

many other facts and conditions, and must be determined in the light of these facts.

To know what is a reasonable amount for interest and profits on the fair value of the plant and business one should know the state of the investment and enterpriser market. In other words, one should know the approximate cost at which the necessary capital and the enterpriser can be had in each particular case. This requires investigations of a general nature as well as under given conditions.

When the total cost of the service has been determined it is necessary to so classify and apportion the various items therein that proper costs per unit can be obtained. Such unit costs are one of the requisites for scientific rate-making.

The first apportionments in this connection consist of the allocations of the various groups which make up the total cost in accordance with their nature or the factors upon which they depend. That is those parts of the expenses which depend on the number of consumers should be classed as consumer expenses. Those items again which depend upon the capacity of the plant or upon the demand for service should be placed under capacity or demand expenses. Items of cost which depend on the output of the plant and which vary with such output should be classed as output expenses.

The next step consists in properly apportioning each of these three classes of expenses between the various branches of the service. That is the total consumer expense should be borne by each branch in proportion to their respective number of customers. Likewise the demand expenses should be allotted to each branch in proportion to their respective demands mostly at the time of the peak load. In the same way the output expenses should be distributed in accordance with the output for each department. The respective consumer, demand, and output cost for each branch must in turn be distributed over each class of service therein in proportion to the number of consumers, the demand, and the output for each of these classes. The final result will then show, for each class of the customers, the proper cost per unit of each of the three classes of expenses named. These separations of the expenses involve complete demand, output and consumer data for each department and for each class of service, as well as accurate and comprehensive operating and traffic statistics generally. In cases of joint opera-

tion it also means a separation of the common expenses between the utilities involved. In addition to this it is often necessary to study transmission losses, the saturation of the territory, the nature of the uses to which the service is put, whether the service is metered or not, wastes and losses of all kinds, the adequacy of the service and numerous other facts and conditions.

In order that the facts that are needed to pass upon the cost-value of the plants and their business and the cost of the service they perform may be available it is necessary that complete and accurate accounts and records be kept. It is further necessary that such accounts and records for each class of utilities should be uniform throughout the state and that they should be regularly audited and inspected. Uniformity is needed in order that like facts for several plants may be obtained for comparative purposes. Without regular audits irregularities are certain to creep into the accounts. Where there are no rules of accounting prescribed and enforced by public authority, the confusion of accounting practices makes the analysis of a utility's expense next to impossible. Until uniform classifications of accounts were made effective, many utilities did not even distinguish between new construction and ordinary running expenses. The result, of course, was that the reported operating expenses were of little or no value for rate-making purposes. It is only by continually explaining the importance of making proper distinctions of this kind and by assisting utilities through an accounting staff, that the accounts and records will be so kept as to disclose the financial conditions of the utilities and furnish all the facts that are needed for making up proper rate schedules.

Work of thus determining the cost value of the plants and the cost of the service and of prescribing and installing proper accounts and records and of auditing and inspecting the same requires the service of persons who have engineering, operating, accounting and statistical training; of persons who are familiar with values, operating and financial matters, and who are competent to analyze and report upon such facts and conditions. The need of such services is also constant, for experience shows that both the valuations and the general rate schedules have to be revised every few years, that special rates including power rates have to be changed almost constantly; and that there can be little or no let-up in accounting and other supervision.

The causes which thus lead to such frequent changes in the rates are numerous. In some cases they are found in increases in the business and in the lowering in the cost per unit of service which follows therefrom and which often make reductions in the rates possible. In other cases again the business may be falling off with the result that the costs per unit are increased, causing the existing rates to be too low. New inventions and discoveries in equipments and methods also have, as a rule, important effects upon costs and rates, tending for the most part towards reductions therein. Competitive and commercial conditions also play their part. They must as a rule be met by proper rates if existing business is to be retained and new business acquired. Even such facts as the seasons of the year and the time of the day the service is used may materially affect the rates for which the business can be taken on.

It is a fact that adequate regulation of public utilities requires so much work of a technical and administrative nature for the promulgation and enforcement of proper standards of service and equitable rate schedules that many states have abandoned all efforts to so regulate directly through legislation alone and to adopt in place thereof a public utility law administered by a state commission. The course of the states in this respect is almost identical with their course when the need of regulating common carriers was first felt. The regulation of such carriers was first attempted through direct legislation alone without adequate means for the enforcement of these laws. It was soon discovered, however, that such laws could not be made to fit the conditions even for the time being without more extended investigations than the legislature itself was in position to make; that the interests involved in their violation were great enough to keep those who had interests at stake from living up to these laws; and that the situation was in fact such that regulation to be effective and equitable would have to be entrusted to some administrative body with the necessary power and equipment for prescribing and enforcing proper rules and practices.

This experience in the railway field has been repeated in the field of other public utilities. It has resulted in such systems of state regulation of both common carriers and other utilities as those which are now represented by our state public utility laws and commissions. These systems therefore are the result of circumstances and conditions that are inherent in our industrial system.

The problems with which regulation has to deal are in fact so persistent in their tendencies, so far reaching in their effect, and so complex in their nature that in order to cope with them properly a separate regulating body is required that is entrusted with wide powers, backed by a strong government, has the broadest and best sources of both general and special information, and that is fully equipped in every other way to promptly deal with the enormous amount of work that is constantly coming before it.

This work is also of such nature that it can be more effectively and more economically carried on on a large than on a small scale, under a stronger than under a weaker government. In the former case the jurisdiction is wider, the powers greater, the sources of information more complete, the practices more uniform, the needs of local communities in their relation to society as a whole more clearly seen. All this, and often much more is necessary for the most effective and equitable solution of the knotty problems that are constantly arising. That the cost is relatively less under a centralized system of regulation than under any other system is evident from the nature of the work and from the economic principles which govern the cost of activities of this kind. It is also shown by actual experience. The average cost for each case of the work of regulation in Wisconsin is considerably less than \$200. For some cases the cost is of course much higher while for other cases it is much lower. For the Milwaukee gas case, for instance, it amounted to about \$4,500, but this is a large plant and the valuation and the audit in this case were perhaps as complete as any that had ever been made. But even the cost of the Milwaukee gas case is much less than the cost of the valuations and audits made by forces temporarily organized for such work by outside experts. In fact, the charges of such experts for less complete work covering similar plants are often from five to ten times as much as this. These statements are based upon actual figures obtained from inquiries into these matters.

In order that the public utility law might afford the public the maximum amount of protection the legislature under the reserve power amended the existing franchises by substituting therefor the so-called indeterminate permit which is a permit or right to occupy streets and highways for the purpose of furnishing the public needed service for compensation, subject to the provisions of the public



utility law of the state, including those which provide that the utility at a fair price may be taken over or purchased by the municipality, and which also provide that when public convenience and necessity require it, the commission, charged with the administration of the public utility laws, may authorize another or a competing utility to enter the field and furnish like or similar service. Until such competition is so authorized, however, the permit or franchise thus obtained is exclusive in its nature.

The Wisconsin indeterminate permit may be said to be the outcome of the efforts that had been made from time to time to find some franchise or permit for public utilities to operate under that would go further in protecting public interest and in stimulating private initiative than any of the existing franchises. At the time the public utility and indeterminate permit laws were enacted, the franchises in effect varied from the perpetual franchise without restrictions to the short term franchise with all sorts of restrictions. The working of these franchises had gradually developed the conviction that they were out of harmony with the nature and purpose of public utilities. Such utilities for instance are not subject to the ordinary laws of competition and public interests therefore require that some other regulating force be substituted for active competition. Their equipment usually has to occupy crowded streets, alleys and highways in which the conditions are such that nothing can be safely left to take its own course. They furnish service which public welfare demands should be continuous, uninterrupted and adequate and which should also be supplied at the lowest reasonable cost. Such utilities, therefore, should not be burdened with competition that involves more in the way of an investment in the entire service than the amount actually necessary to that end under the most economical and effective system of operation; nor should they be loaded down with special taxes or charges of various kinds that tend to cause unnecessary and unwise increase in the cost of the service and to lower its quality.

Commenting on the legislative policy, and its promotion of the public welfare, the court, in a case decided the present year, said:

The policy of the state, embodied in the legislative regulations of public utilities is that the public welfare as regards these enterprises is best promoted through such means as afford the highest practical efficiency at the

lowest cost, and that this may best be accomplished by uniting existing facilities, under proper control and regulation, to meet the public convenience and necessity, having regard for existing property interests and the rights and privileges appertaining thereto. *McKinley Tel. Co. v. Cumberland Tel. Co.*, 152 Wis., 359-363.

This policy could not be effectively exercised through the ordinary franchise because the provisions therein since they remained in effect for years were too inelastic to be adjusted to the rapidly changing conditions, and because in the very nature of things they could not promote efficient service at the lowest reasonable cost. The perpetual and long term franchises also give the utilities unduly great powers and tend to prevent such readjustments of service and rates as are usually found to be necessary every year or two and even oftener. Representing valuable rights they also lead to over-capitalization and to many other practices under which public welfare can not be best promoted.

Under the short term franchise with its many restrictions and owing to the uncertainties as to what would happen at the end of the franchise period, utilities were not only unwilling to make necessary extensions of the plants, but were often unable to obtain capital for such extensions. Since the franchise terminated before long it was necessary either to amortize the cost of the plant and the extensions which of course meant high rates and poor service, or to give assurance that the franchise would be renewed at the end of its life which made it partake of many of the objections of the perpetual franchise. Again for most communities the future needs and conditions are so hidden that they can not be correctly foreseen even a short time in advance and for this reason the restrictions even in the short term franchises will become unfair to one side or the other long before their expiration. The general result of these imperfections has been to retard the development of the communities, to disturb investment and business conditions generally, to lead to all sorts of political intrigues, dickerings and betrayals, and to result in loose methods of operation and of accounting and to the shirking of many just obligations.

These objections to the perpetual and short term franchises have been overcome by a franchise or permit which permits operation until the utility is taken over by the municipality for a fair compensation. It is also an exclusive permit until public conve-

nience and necessity demand that another utility performing like service be permitted to enter the field. Under this permit utilities are subject to such state regulation as is provided by the public utility law. This permit when taken in connection with the public utility law is in harmony with the nature of the utility business. The essentials of regulation possible of attainment under the indeterminate permit and public utility laws, but to a large extent impossible under franchise and ordinance regulation are the following:

1. The public is entitled to adequate service at reasonable rates which are free from unjust discriminations and which vary with the cost of rendering the service.

2. Since the municipality has the power to grant or withhold the use of its streets and highways for public utility purposes, it may also, where no utility exists and where a certificate of public convenience and necessity has been granted, either reject or accept applications for such use; and through the exercise of this power it is in position to largely control the situation in the interest of the public.

3. The municipality has been granted the power to acquire at a fair price the property and business of the utilities by which it is served and can exercise this power and enter the public utility business whenever it chooses to do so, or whenever it becomes dissatisfied with either the service or the rates, or with any other condition.

4. Whenever public convenience and necessity demand it, the municipality or some other utility can obtain authority to enter the field and to furnish service in competition with the existing utility.

5. The utilities for adequate service are entitled to rates that are reasonable under the circumstances.

6. The utilities are entitled to fair prices for the property that is used for the convenience of the public when it is taken over by the municipality.

7. Except where active competition existed when the public utility and indeterminate permit laws went into effect, the utilities are entitled to the exclusive right to furnish the service until the property is taken over by the municipality or until for good reasons a competitor is authorized to enter the field.

8. Public utilities are entitled to have all investments made

for the benefit of the public kept intact through proper depreciation charges included in the rates for the service rendered. As an offset to the loss of speculative profits that are caused by regulation they should as far as possible be protected from losses that have their source in active competition.

The state legislature in enacting the public utility law went even further than this in order to protect the public, for in this law it extended to the municipality about the same powers over service and other matters as it gave to the state commission, and subject only to review by such commission. In other words, the municipality has now complete powers in these matters, and may exercise the same without any interference on the part of the state commission except as an appellate tribunal when someone appeals from the action of the municipality. This power, however, the municipalities make but limited use of. Instead of acting upon such matters themselves they prefer to bring them before the state commission.

Only a part of the work of regulation is negative. A large and by no means unimportant part is positive. The regulating body must not only compel the utility to desist from acts and practices which are wrongful, but it must show the utility how to substitute acts and practices which are proper. Its duties with respect to accounting and the installation of systems have already been referred to. Suffice it to say that this work is continuous, laborious and not always appreciated. But its effect on the business management is most wholesome. Municipal utilities more than private utilities are the chief patrons of the commission in this respect. The annual reports of all companies are audited and of course much informal advice is given.

In this connection, attention may be called to what one service inspector of the commission did in addition to his routine tests during a period of two months.

In this time he inspected 12 municipal plants and 40 private plants. These figures are for the municipal plants only, because it would take too long to enumerate them for both municipal and private plants. The assistance given to the municipal plants included information on meter testing for six of the plants; one plant was shown how to test 220-volt meters with their 110-volt rotating standard; one plant was instructed in proper methods for testing the phase meters; in one of the newer plants the inspector helped in

making a number of the meter tests to show the utility how it should be done. Meter test record forms were drawn up for three plants and one plant was given advice regarding the metering of street lighting current. Two plants were given information at their own request regarding matters of operation. In three cases the inspector drew up forms for station records. One was given help in the use of graphic recording instruments. One was shown how to overcome difficulties due to the unbalancing of the system, and another was shown how to eliminate the trouble caused by moving picture machines on its circuit. One plant asked and received advice as to the running of its high tension lines across a railroad track. The administrations in two cities were given extensive assistance regarding improvements which they propose making in their plants. A group of city officials was given information regarding changing from a single phase to a three phase system. A new plant had all the rules of service, their importance and their bearing thoroughly explained to them at their own request. Information regarding rates was given to one city, and at the request of the city the features of a proper accounting system were pointed out to it. One city obtained information regarding interference between high voltage power lines and transmission lines. Switchboard instruments were adjusted for another plant. In another case help was given on a complaint meter test which showed that the plant had been using a wrong meter constantly which destroyed the accuracy of its test. In many cases this information was given not only to the operators of the plant but before the lighting commission of the village board. These are probably sufficient to show some of the ways in which a state commission can help to improve the conditions of utility operation in a positive sense.

Besides the assistance in accounting and service matters the commission has given a great deal of engineering assistance to utilities which were not in a position to employ consulting engineering help. To give a full detail of this would require altogether too much time, but a few cases will illustrate. The mayor of one city requested an official examination of the plans and specifications of a proposed water and light plant which had been prepared for the city. At the same time a request was made for a test of a new well for the proposed works. Both of these pieces of work were performed by the commission's staff. In another city, the city author-

ities requested advice from the commission as to the advisability of contracting with the Hydro-Electric Power Company for electric current and of using electric instead of steam power for operating the city water works. They also requested an examination and report upon the condition of the plant and equipment, with recommendations as to any repairs and improvements needed. Both requests were granted, and a complete report was furnished to the city. In still another place a complete investigation of the plant was made at the request of the village, and a detailed report showing what changes were necessary was submitted to the village. Similar pieces of work were done for a great many cities and villages in the state without any direct cost to them. In fact the commission has more applications for such work than it is in position to carry out.

State regulation as it is thus known today, while it has its shortcomings and often fails to give general satisfaction, has on the whole been fairly successful. It has led to general improvements in the service and to more equitable and on the whole lower rates. The investigations which have resulted from it have also thrown much needed light upon the many important problems that are involved in the operation and regulation of public utilities.

The net results, for instance, of the various measures by which the Wisconsin commission has kept up the adequacy of the service have been a marked improvement in the heating value, pressure and purity of gas in many cities in the state, the regularity of voltage of electric utilities, and general improvement in telephone and street railway service and the purity and pressure of water. Much of the result of the commission's work in this direction does not appear on the surface because it consists in preventing deterioration of service as well as in improving poor service. It is estimated, however, that the saving from actual improvements in the gas and electric service alone has been many times as great to the people of the state as the cost to the state of its entire service work, to more even than the cost of all the work of the entire commission. No money value, of course, can be set upon the fire protection and the prevention of disease which have resulted from the commission's requirements as to pressure and purity of water, or on the improvements in street railway and telephone service that have been brought about, but there are reasons to believe that the benefits here also have been very great.

In the rates there have been both decreases and increases, but the former are by far the most important. In fact, the decreases amount to many times as much as the increases, and the net decrease foots up to a large sum. Detailed figures upon these points are available but space cannot be given to them here. The decreases in the rates affect mostly the larger plants while such increases as have been authorized cover for the most part the smaller ones. In fact, the latter are largely made up of small rural mutual telephone companies and municipally owned water works, in which the customers are also the stockholders, and which were established under circumstances under which they could not be placed on business bases, and for which the increases were absolutely in order to protect and keep up the service. In many of these cases the increases were also applied for by the customers themselves. To have denied these applications would have meant loss of service and would therefore clearly have been contrary to public policy. It would have been cause for just censure. When conditions are such as to require it, it is as much in line with good practice and public policy to increase rates that are too low as to decrease rates that are too high.

The regulation in question has also been the means through which most of the more serious or unjust discriminations in the rates that formerly existed have been done away with. These discriminations were often great. They frequently affected every branch of the service as well as the different classes of customers in each branch. To eliminate such discriminations and to replace them by more equitable rates is in itself a big task. It is in fact so important an accomplishment that it is likely to much more than justify the expenses that were incurred therein. Unjust discriminations in rates are serious from business and social points of view. The circumstances under which they arise are as a rule such that constant supervision is required in order to keep them out of the ordinary rate schedule.

The commission in passing upon its cases is sparing no efforts to secure all the facts in the matter that tend to throw any light on the situation. These facts become a part of the records in the case and constitute important evidence in the defense of those cases which are carried to the courts. They account very largely for the fact that the orders of the commission have been sustained in practically

every one of more than thirty appeals to the courts, which the utilities have taken. Such facts have also been of material aid to the state legal department in its generally successful efforts to defeat the application for the staying of these orders of the commission, while the case was pending in the courts. Much of the credit for these successes in courts is of course due to the fact that the state has a very effective attorney-general's department. Such regulation has also resulted in many other advantages that are of considerable importance. It has among other things done much to determine what in actual practice the much used term "reasonable" signifies. While it is not maintained that anything like a solution of the full meaning of this term under various conditions has been reached, yet many of the chief features involved are now fairly well understood. The application of economic principles to questions essentially ethical is certainly an important contribution of state regulation towards the solution of public service problems.

State regulation has moreover afforded an easy, inexpensive and fair means for an informal settlement of many disputes. That such settlements have increased in number with the passage of years since the law was passed only attests the increase in importance of public utility service.

The investigations and publicity which have in general characterized the councils of regulatory bodies have been good for the public as well as the industries. The rights and duties of the contending interests have been defined, facts previously hidden under the veil of secrecy, of distrust or of misunderstanding have been revealed, with the result that there is beginning an era of a better understanding of the situation. Furthermore, there are constantly evolved more definite principles according to which the future relations between producers and consumers may be more easily adjusted.

It should not be assumed from this that state regulation is regarded as a sacred institution that it might not be safe to either modify or abolish. Far from it. If economic history teaches anything it is that institutions of this kind are simply the outcome of existing economic conditions and that they as a rule do not long survive these conditions. The conditions and tendencies in the public utility field, however, which have brought about state regulation are still present and bid fair to remain so for some time. The public utility field for instance is still a legitimate field for private



initiative and investments. There is also a marked tendency therein toward centralization in ownership and operation, and these tendencies are greatly promoted by the development of hydro-electric and central power stations which furnish energy or power to numerous plants in certain sections throughout the various parts of the country. The electrical and other utilities while in a sense firmly established are still subject to upheavals which flow from inventions and from the competition of new sources of supply and the risks involved therein are considerable. These forces are state-wide, and they greatly affect the conditions of regulation. As long as they exist it would seem important that the regulating power also should be state-wide or as broad as the forces with which it has to deal.

It has already been intimated that regulation in order to be effective must be coextensive with the operations of the utility which is to be controlled. In other words, the jurisdiction of the regulating body must be broad enough to cover all the matters with which a comprehensive system of regulation has to deal.

The municipality has inadequate jurisdiction because its boundaries do not mark the limits of utility operation. Utilities are becoming almost state-wide, particularly the powerful utilities which it is most important to control. Leaving out of consideration the small mutual telephone companies which serve the rural districts only, there were 333 telephone exchange systems in Wisconsin in 1913, of which 294 served both rural and urban subscribers. These systems had 51,333 rural telephones and 135,845 in cities. The cities could not regulate the rural business nor could the farmers control the business within the city, nor can either regulate the rates between both. There are a large number of these telephone companies which do the switching work for rural lines which run to their switchboards. If the rates for rural service are too low, the city patrons are discriminated against, and vice versa. If rural lines are in poor condition, city patrons cannot secure good service over those lines. Yet the city cannot possibly regulate the rates or service on lines outside the city. The only body which can do anything in these cases is the state.

In order to insure adequate telephone service it is often necessary that physical connection between telephone lines be secured. The city and the township are alike helpless in attempting to define the terms which should govern in physical connection cases which would affect them both.

Nor is the telephone industry the only line of utility business over which cities have insufficient jurisdiction for purposes of comprehensive regulation. Replies received to a circular letter sent to all utilities in the state operating electric, gas or water departments, indicate that nearly 40 per cent of such departments operate beyond the boundaries of a single city. Replies were received covering 277 such departments and of these 106 were not confined to a single municipality. Among these 106 were many of the larger utilities. Some idea of the extent of the operations of various utilities may be gained by a review of the facts with regard to a few of them.

In Wisconsin one power company operates in seven cities and villages and in the intervening towns. Each of three other companies of this kind operates in from three to twelve cities and villages and in the towns which they pass through. One company operates in over twenty cities and villages as well as in towns between them.

In Michigan the Commonwealth Power Company supplies 21 cities and villages, and the Grand Rapids-Muskegon Power Company supplies 14. The Iowa Railway and Light Company supplies gas, electric or electric railway service in 48 cities and villages. The Central Illinois Public Service Company has properties in over 100 cities and villages. Suppose that each of these cities and villages started out to regulate this company, or so much of it as was within their limits, 100 different regulative bodies controlling the same corporation or its branches, local control would be running riot!

In his work on *Municipal Franchises*, Mr. Delos Wilcox expresses this view very clearly. He says:

After all the day of walled cities is past and now an urban community is primarily a congested spot on the state map, a center of population and industrial activity intimately related to the personal and property interests of all the citizens within its sphere of influence, which often extends to and beyond the boundaries of the commonwealth itself. Public utilities although still comparatively simple industries have gone far enough beyond merely local bounds to require complex governmental machinery to operate or regulate them.

The situation with respect to utilities is similar to the situation which now confronts regulating bodies with respect to railroads. The majority of railroads and the majority of their operations have long since ceased to be primarily only state-wide in character. The

nature of the railroad industry and its natural development was necessarily such that it could pay no attention to the imaginary state lines which mark the limits of state jurisdiction. It has however been held that interstate operations in so far as they are performed within a state are beyond the jurisdiction of the state. The jurisdiction of the federal government is even regarded as paramount to the jurisdiction of the state in those cases where decisions of state regulating bodies with respect to purely state traffic are in conflict with the decision of the federal regulating body with respect to interstate traffic. This conflict of jurisdiction and the inadequacy of the smaller jurisdiction to adequately regulate business which had outgrown their jurisdiction should be frankly recognized. The case of the states as opposed to the federal government is substantially the same as the case of the local governments against the state government and in the latter case too the inadequacy should be frankly recognized. The case of the state is somewhat strengthened by the fact that under the federal system the state is supreme within its legitimate sphere, and the regulation of state commerce, until otherwise provided for, is its particular province.

Following the example of state governments, local units could adopt and in some cases have adopted the method of regulation by city commission. This alternative has come to the front particularly since the advent of the commission form of local government. While some of the objections which have been raised against the franchise or ordinance method of regulation are not applicable to commissions, the more salient objections still remain. Such a commission would have no jurisdiction beyond the limits of the city. Applying this method to the city of Milwaukee, where, if anywhere in Wisconsin, it could be made to apply, we would have this situation:

The Milwaukee Electric Railway and Light Company embraces:

- (1) The Milwaukee city railways,
- (2) Eleven suburban lines,
- (3) Four interurban lines with 175 miles of track,
- (4) Four city lines in Racine,
- (5) Two lighting systems,
- (6) One heating system.

Seven of the eighteen city lines extend beyond the city limits. Nine of the suburban lines have in addition to their regular city run, a second fare zone, beyond the city. The congested business

and residence districts of a city like Milwaukee must have good transportation facilities to the suburban outlets in order to insure proper living conditions. No system of local control could have jurisdiction to link the urban and suburban lines so as to secure this service. Again, what about the passenger who rides between points in the city on a suburban car? What if the city's requirements of local service interfered with proper suburban service on suburban and interurban lines? There are fourteen power plants and sub-stations, some of which furnish current for both railway and lighting, and supply steam for heating. There are thousands of feet of transmission lines, overhead and underground, which are used jointly for lighting and railway. There are 600 cars, 360 miles of track, and over 360 miles of trolley wire, of which large portions are used interchangeably by the railway systems which give urban service in Milwaukee over 18 lines, in Racine over 4 lines, in Watertown over 1 line, suburban service over 9 lines and interurban service over 4 lines. The Commerce Street power station supplies current for city lighting, city railway and interurban railway within a radius of 20 miles. The Milwaukee shops are used for the entire system. Hydro-electric power is brought from the Kilburn dam over 100 miles distant. The difficulties multiply the more we consider the minutiae of regulation.

Few cities could afford to maintain competent commissions, who would take up the subject of regulation thoroughly. If in the state of Wisconsin, for instance, we grant that cities whose population exceeds 10,000 could maintain local boards, an aggregate urban population of over 400,000 would have to go either without regulation or be given some system of state control. The same would apply to our suburban and farming communities. The suggestion of maintaining a separate state board for utilities not coming within the purview of local boards is open to the objection that it would entail a needless expense upon the state for the experts and skilled assistance, for the state board would be needed as much for half of the utilities as for the whole of them.

One of the most prevalent of the objections to state control is that the centralization of control over local utilities in the hands of the state represents a dangerous, undemocratic tendency, that would tend to rob the people of the power which they should exercise. This is primarily a question of political science. What is the

state and what is the relation of the city to it? It is unnecessary to go into that question at length. The supreme court of the United States and the highest courts of all the states have repeatedly asserted the paramount authority of the state over all of the units which go to make it up. The city, in the language of the United States supreme court in one case, is the creature of the state given certain powers by the state for the purpose of aiding the state in its supreme work of administering government. In exercising control over local utilities the state is not stretching its power, nor assuming anything not inherent in its very nature.

Does the placing of authority over local utilities in the hands of a state commission deprive the people of any power which they should exercise? This might be answered by asking who they are that elect the members of the legislature. This body represents the active power of the state. The power to regulate public service corporations has always rested in sovereignty. In this country the state is the sovereign power. Whatever authority over public service corporations may be exercised by a common council, or a village or town board would be derived directly from the state through the legislature. Will anyone claim that the election of a member of the common council or of a village or town board is a matter closer to the people than the election of a member of the legislature?

We think and speak of the state as a power separate and remote from the people. But the people are the state. If the representatives of the people in the legislature make mistakes or disregard the desires of their constituents, it is the people themselves, not some abstract power, that must and will correct the error.

It is not even good ground for an academic controversy to hold that the exercise by the state of any necessary power acts to deprive the people who form the state of their power. The real question as disclosed in this is not whether in either form of the expression of governmental authority the people may be deprived of a measure of their power to determine their own political destiny, but rather it is this: Is a common council or a village or town board with its multifarious duties more responsive to the demands of its own community for the remedy of evils which are inseparable from the operation of public utilities, than a state commission, created for the express purpose of correcting those evils, sitting all the time, and being equipped with the means of ascertaining and determining accurately the nature and extent of the evils?

The proposition that local authorities are any more responsive to the demands of the people than are the state authorities, is difficult to maintain. In the final analysis the people control legislatures, common councils, and boards, and the promptness of the response in either case to their complaints is measured by the force of the demand for a remedy.

Instead of being undemocratic, state regulation is quite the contrary. Its regulation of local utilities in Wisconsin brings the power closer to the people, more available for every citizen, than it could be under any other system. Under local regulation, if a citizen feels that he is being dealt with unjustly, he may take his grievance to the local board or council. If he is able himself or through attorney to present the matter convincingly, an order may be issued. The utility, however, may refuse to obey the order. Who, then, is to carry the matter up to the courts for final adjudication? The complaining citizen cannot afford to do so at his own expense, and the city is not obliged to do it. Under state regulation as at present administered, each complaint is looked into without expense to the complainant except the small share he may pay in taxes to maintain the commission. If it is well founded, the utility is ordered to remedy the trouble, and if it fails to do so the commission and not the private citizen takes the matter up to the courts for final adjudication.

It is frequently claimed that it is a reflection upon the intelligence of local communities to assume that a state commission is better able to regulate their utilities than they are themselves. This is in fact no more of a reflection upon localities than to require doctors, lawyers and dentists whom they employ locally to have specific authority to practice their professions. There are many functions which affect the convenience and welfare of local communities that the state can perform more economically and efficiently than the communities themselves, and this being true, it is in no way a reflection upon the local communities.

It is often said that state commissions in their desire to be fair to the utilities are more liberal than local authorities would be in the valuations they place upon their property and in the returns they allow thereon for interest and profits.

These statements, however, do not seem to be supported either by facts or by other evidence. No efforts, for instance, appear to

have been made to determine whether higher than fair prices have been allowed for any of the elements that enter into the valuation, or whether the valuations include elements which do not properly belong therein. Nor have they brought out anything that even tends to indicate that the valuations and the returns for interest and profits that are allowed are greater than the amounts for which the necessary capital and the enterpriser can, in the long run, be had; or that shows that the returns thus allowed are higher than the returns obtained by these factors in other enterprises where the risks and other conditions are similar. These matters are apparently not important enough for consideration. In this connection it may be said that in the public utility field, the same as in other industries, it is in the long run necessary to allow such valuations and returns for interest and profits as will bring the necessary capital and enterprisers into the field; and that the amounts that must thus be allowed for these purposes are about the same as the amounts that are allowed in other undertakings where conditions are similar.

While, in the absence of regulation, public utilities have a certain amount of monopoly control over their service and rates, they also resemble ordinary competitive enterprises in this that they have to buy everything that enters into the cost of their plants, and everything that enters into the cost of the service in the open market and pay the market prices therefor. That is, the utilities, the same as other enterprises, must obtain their factors of production, or the land, labor, capital and enterpriser they need, in the general market and at prevailing rates or prices. In constructing or extending their plants these utilities must pay the market prices on every element that is included in the cost of the plant. In producing and furnishing the service they render, they must also pay the prevailing prices on every item that becomes a part of the cost of the service, including interest and profits. The prices thus paid by the utilities are fixed by forces over which neither the utilities nor the state have much if any control. All that can be fairly required of the utilities in this connection is that they do not pay more than they have to pay for any item, and that in making these expenditures they exercise ordinary judgment and foresight in other respects. The cost to the utilities of the service under these circumstances also becomes the cost of this service to the public.

The Wisconsin commission is constantly investigating the cost

of material, labor and other services, the cost at which the capital and the enterpriser can be had, and the operating expenses that are involved in furnishing the service. In appraising the plants it spares no efforts in obtaining the original cost of the plant and its business, the cost of the property in actual use at the time of the appraisal, and the cost of reproducing this property and of the business. Its inventories of the property are as a rule as complete as any that can be made. Its price lists cover not only the cash and credit prices of the articles involved both at the factory and at various points in the country. Its statistics of wages and salaries of the various classes of labor and professional services that are needed are regarded by those who are familiar with them as exceptionally complete. For the purpose of determining the depreciation that has taken place in the property it obtains full data of the age, upkeep, and condition of all the depreciable property. It audits the earnings and operating expenses of the plant from its beginning and determines what the reasonable cost of operation is under the circumstances. It also studies local conditions, the plans of the construction, the methods of operation and all other features that will throw light on whether ordinary judgment has been exercised in planning, constructing and operating the plant and whether it has been and now is furnishing service under normal conditions. It is upon facts of this character that our valuations are computed. With data as complete as this; with honest and competent men to make the computations is it likely that the results obtained are far out of the way?

With respect to the cost of obtaining capital these investigations also show that during the past year the net receipts to the utilities on more than forty bond issues were of such an amount as to bring the annual cost of the capital thus obtained up to something above 6 per cent. The bonds in these cases bear interest at the rates of 5 and 6 per cent. The discounts at which the bonds were taken ranged from 3 to 15 per cent. The selling expense varied from about 2 to about 6 per cent. In no case did the bonds exceed 80 per cent of the value of the plant and the business as determined by the commission, and was in most instances less than this. In all cases the net earnings of the plants, or the balance left for interest and profits after the operating expense, depreciation and taxes had been provided for, amounted to at least twice as much as the interest



charges on the bonds outstanding. If the bonds of these utilities had been less well secured, that is, if they had covered a greater proportion of the value of the plant than they did, and if the net earnings had been poorer, they would unquestionably have sold at still lower prices than those at which they were selling, and the cost to the utilities of the capital obtained would have been still greater. Those bond issues represent small as well as large plants, and cover conditions that may be regarded as normal.

If bonds that cover only about three-fourths of the value of the plant and the business and which are also protected by net earnings that regularly amount to about twice as much as the interest charges on the bonds, cannot be sold at prices under which the net cost of the capital obtained is less than 6 per cent, then it is also certain that the remaining fourth of the capital needed, which is much less well secured, will cost the company much more than 6 per cent. That this is the case has also been repeatedly established, not only by investigations of the commission but from the income accounts, financial statements and market prices of the securities of most enterprises for which these facts are available. The stock that comes on top of bond issues which bond issues cover say fully three-fourths of the value of the property involved, have not, at least for the smaller utilities, during the past few years, been selling in the open market on as low as a 6 per cent basis except in cases where the net earnings applicable as dividends have on the whole amounted to twice as much as this rate, and except further where such stock was also favored by substantial extra dividends from time to time. This has even been true for companies the par value of whose bonds and stocks have not materially exceeded the fair value of the plant and the business.

When the commission allows 7 per cent to 7.5 per cent for interest and profit on what it has found to be the fair value of the plant and the business, it does so because investigation has disclosed that all the capital and the enterpriser that are needed cannot be had on better terms, and that this is the ruling rate for interest and profits under similar conditions. This rate of return on the entire fair value amounts to 6 per cent on the bonds and about twice as much on the stock, when the former represents about 75 per cent and the latter about 25 per cent of such valuation.

It is among the main functions of the commission to determine

the fair or normal cost-value of the plant and the business and the fair or normal cost and price of the service, including the elements of cost which represent reasonable returns for interest and profit. It is further one of the functions of the commission to so distribute the total cost of the service among the customers of the utilities that each branch of this service and each customer therein are made to bear their just share of this cost. From the experience we have so far had in these matters it can be said that in determining the value and the rates there is fully as much danger that the commission will go below the level at which the capital and the enterpriser can be had as it is that it will allow more for these purposes than is reasonable and necessary under the circumstances.

The Wisconsin commission has had several rather sharp reminders of the workings of the economic laws in the public utility field. Thus we have had to pass upon many cases, where because the rates charged by the utility for their services happened to yield lower returns than were necessary to cover the cost of the factors of production, including the market rates for interest and profits, it was utterly impossible for the utilities to obtain new capital for much needed additions to their plants and to their service. The situation was in fact such that the public either had to pay higher rates or go without much needed service. When the commission in some of these cases found that public interests required that the rates be raised just enough to cover the cost of the service and thus enable the utilities to obtain the additional capital that was so much needed for extensions of the plant and the service, it was most bitterly and intemperately assailed not only by the local press but by others. Similar criticisms have also been heaped upon the commission in many cases when in the public interest it has declined to reduce the rates below the cost of the service and below the level at which additional capital could be had. There are apparently many who fail to realize the fact that the utilities have to pay the market prices for the factors of production and that the commission by attempting to reduce the rates for the service to so low a point that the returns therefrom will not cover such costs or prices are certain in the end to do the public much more harm than good.

A large proportion of the complaints against state commissions lacks the evidence of good faith. They frequently appear to be made for some ulterior purpose. In many cases before the com-

missions the experts for the utility claim and endeavor to sustain a valuation that is excessive, while the experts representing the municipality endeavor to sustain a valuation that is much too low. When the commission carefully examines the claims of both sides and also makes a complete valuation of its own, and finally finds that the fair value is lower than that claimed by the plant and higher than that claimed by the city, both sides are disappointed and often roundly abuse the commission. The situation is similar when it comes to the rates of return for interest and profit on the valuation so found. The experts for the utility will claim as much as 10 per cent to 15 per cent while those who appear for the municipality will hold that 4 per cent or 5 per cent is enough for these purposes. The commission may find that the necessary capital and the enterpriser cannot be had for less than say 7 per cent and allow this amount. Again there is either affected or real disappointment and criticism. Both sides appear to think that in order to get a favorable verdict it is necessary to adhere to the old practice before the courts of making extreme claims. The criticism of the commissions in these cases, especially when it comes from the side of the municipality, is often widely published. It is also often accepted by many at its face value without the slightest investigation into the merits of the situation.

The principles and facts which govern valuations and the rates of return thereon do not change with changes in the system of regulation. Assuming ordinary honesty in the matter, is it not reasonable to assume that that body will arrive at the fairest results which has the broadest powers, the widest jurisdiction, the best equipment and the greatest fund of stored-up facts to draw on? The work of the Wisconsin commission in these matters has stood the tests of the courts as well as some of the most severe tests in other respects that can be applied to work of this kind. In the majority of cases the utilities cannot even secure either temporary or permanent injunctions against its ruling pending the outcome in court. Can this much be said of the work of others which is often pointed to as exemplary?

I have often compared as well as I could the valuations made by state commissions with the valuations made by juries and boards which were specially appointed to value specific properties and in every instance I have found the valuations made by state commis-

sions to be the lower. One reason why state valuations are the lower is probably found in this that state commissions have as a rule much more complete data concerning the various elements that enter into the value than it is possible for temporary boards and juries to obtain and that for this reason those elements which are unknown or in doubt and for which values are as a rule arbitrarily fixed are greatly reduced in number.

If those who now object to or find fault with the laws in question and their administration, instead of attempting to sustain some theory or support some propaganda, would fully and fairly examine the rulings under these laws and the result of their operations, and compare these rulings and results with the needs and purpose of the utility service and the cost of obtaining the necessary capital and enterpriser, together with the other factors of production, and if in addition to this they would also fairly compare the conditions generally today with respect to service, rates and other matters with the conditions that existed previously to the time these laws were enacted, it is very certain that they would have wholly different stories to tell.

One of the elements of fair value which has been generally allowed by state commissions but which it is claimed would be disallowed under local control is the element of "going value." The question whether there is or is not a going value depends upon other considerations than the system of control which happens to be in vogue. Briefly stated, going value depends upon the following facts:

A mere physical plant, no matter how perfect or how well it is adapted to the purpose for which it is intended, amounts to but little unless it has or can obtain a paying business. Without business it is a dead mass instead of a living concern earning profits. To have profits it must have business or customers who avail themselves of the services it renders at rates that yield an adequate income. But now plants are seldom paying at the start. Several years are usually required before they obtain a sufficient amount of business or earnings to cover operating expenses, including depreciation and a reasonable rate of interest upon the investment. The amount by which the earnings fail to meet these requirements may thus be regarded as deficits from operation. These deficits constitute the cost of building up the business of the plant. They are as much a part of the cost of building up the business as loss of interest during the construction of the plant is a part of the cost of its construction. They are taken into account by those who enter upon such undertakings, and if they cannot be recovered in some way, the plant fails

by that much to yield reasonable returns upon the amount that has been expended upon it and its business. Such deficits may be covered either by being regarded as a part of the investment and included in the capital upon which interest is allowed, or they may be carried until they can be written off when the earnings have so grown as to leave a surplus above a reasonable return on the investment that is large enough to permit it . . . . . Whether they should go into the capital account, or whether they should be written off, as indicated, are questions that largely depend on the circumstances in each particular case.

It is, of course, a fact that if the rates could be fixed, as in rare instances they actually have been, at a sufficiently high point in the beginning to cover all legitimate expenses, including a reasonable return on the investment, the deficits might be greatly reduced and the cost of developing the business almost wiped out. Generally speaking, however, such rates seem to be wholly out of the question. Until a sufficient number of consumers have been obtained, such rates would necessarily be too high. Instead of increasing the earnings they would be likely to decrease them. There are even cases where such rates might be entirely prohibitive and result in no earnings whatsoever.

Hence we find that it is the almost universal experience of plants to show deficits below what are reasonable earnings for at least some of the early years. The plants do, of course, try to overcome these deficits both by continuing the low rates at the start and by direct expenditures to develop new business. Since public service enterprises are in a measure businesses of increasing returns, it is in line with good business principles that such methods be adopted. In the face of this situation which cannot be successfully denied to exist, should a public regulating body, charged with the responsibility of adjusting the relations between investors and consumers upon legal and equitable bases, deliberately disregard this condition? It is submitted that this cannot be done and still enable the regulating body to square itself with existing law and sound economics.

This, in brief, explains the position of the Wisconsin commission on "going value." Nor has it ever departed from this position in any of its decisions. Whatever else may in some quarters have been assumed to have been included in "going value" is a pure assumption and has no foundation in fact. To be sure, it has at times varied the methods according to which going value is ap-

praised, but the principle upon which such appraisal rested has never varied.

Another objection which is often raised against state regulation is that it tends to prevent the amortization of investment. Those who raise these objections often speak of amortization as something that is always practicable, as something that is within reach of all communities at all times. They apparently overlook the fact that if a plant is to be amortized it must be through charges upon the customers over and above the charges which are necessary to cover operating expenses including depreciation and returns on the investment, and that they therefore may be burdensome to the customers and even contrary to public policy.

The real significance of amortization charges becomes apparent when they are reduced to the cost per unit of the service and included in the monthly bill to the customer. For five typical electric lighting and power plants serving cities ranging in population from about 3,000 to about 380,000, the annual charges necessary for amortizing the cost of the plants in twenty years on a 4 per cent sinking fund basis amounted to from 1.33 cents to over 2 cents per kilowatt hour for the ordinary short hour lighting users and from 0.5 to about 1 cent per kilowatt hour for the ordinary eight hour per day power user.

For a typical gas plant serving a city with something over 25,000 inhabitants, the effect of amortizing the cost of the plant in twenty years on a 4 per cent sinking fund basis, under the ordinary demand form of rate schedule, would be an increase of about 20 cents for each 1,000 cubic feet of gas used to those who use about 2,000 cubic feet per month.

It is hardly necessary to say that these increases in the rates because of the amortization charges are great enough to be burdensome to the ordinary user, and to prevent the proper development of the service or saturation of the territory. They would therefore prevent many from availing themselves of the conveniences which such services offer and which it is their real purpose to furnish. They would make the existing generation bear very high charges which it cannot afford to bear in order that succeeding generations may enjoy these facilities at very low rates. The effect of this is all the greater since the amortization charges would have to be borne while the communities were smaller and the cost per unit of service

comparatively high. For we all know that the cost per unit of utility service tends to decrease with increase in population or the number of consumers.

Under the ordinary term franchise, however, whether its life is long or short, it is as a rule necessary to either keep the rates high enough to cover such amortization or to agree to renew the franchise when it expires. This has led to much confusion and many disadvantages to the public. It was largely in order to protect the public from such disadvantages that Wisconsin has amended such franchises by substituting therefor the so-called indeterminate franchise. While under the indeterminate franchise it is not necessary to burden the service by amortization and other charges of this kind, the commission has frequently endeavored, for one reason or another, to put such charges into effect. In practically every case, however, the opposition to such charges has been so great that efforts to put them into effect have had to be abandoned. The plants object to them because they will make the rates so high as to prevent them from properly developing their business. The public objects to them because they will make their rates burdensome. Under such circumstances as these, it is manifestly out of the question to institute any system under which the cost of the utilities can be generally amortized.

State regulation is also objected to because it is said to tend to prevent cities from entering into competition with existing plants. If this objection means to convey the impression that state regulation, especially that operating through the indeterminate permit, tends to prevent municipal ownership, the objection is not well founded. Under the indeterminate permit the methods by which utilities may be taken over by the municipality have been very much simplified. Under its provisions several utilities, especially water works, have been taken over. Whether utilities shall be municipally owned is dependent much more upon the attitude of the public, the financial burden of the city, the character of the management of the private utility, the general effectiveness and promptness of the system of regulation, than upon the machinery provided for acquiring the property.

State regulation, however, in a way does seek to prevent ruinous competition either between private plants or private and municipal plants. To the thoughtful student of utility problems this policy,

instead of representing one of the weaknesses, is one of the strengths of state regulation. The Wisconsin commission, in passing upon applications for certificates of convenience and necessity, has repeatedly investigated the effect upon the existing utility and its customers, and upon the municipality of dividing up the field between a municipal and private plant. Almost invariably a division of the business would mean a decrease in the net earnings of the existing plant, and an increase in the cost per unit of service to its customers. It was found, too, that the cost at which the competing plant would be rendering the service was very much in excess of what the same service was costing the existing plant. The facts in one typical case were these: To have erected a municipal plant for the purpose of lighting streets and public buildings would have lowered the earnings of the existing plant by double the amount at which it would have lowered its expenses. The cost to the city of its street and public lighting would have been increased 15 per cent. The cost per kilowatt hour to the private customers of the existing plant would have been increased about 20 per cent. This increase in the cost would have made rates so high as to have retarded any proper development of the business for both the private and the municipal plant. It was even doubtful whether the existing plant would have been able to hold all the business which it then had. In the absence of inefficiency on the part of the existing plant, it has not often been deemed wise economically or in line with public policy to permit competition which would thus increase cost and retard development.

The regulation of necessary service furnished by capital privately owned is so delicate a matter that it should be exercised with the greatest of care. No steps should be taken in this work, the justice and effect of which have not been clearly established. Everything should be done to prevent errors and mistakes whether of judgment or otherwise, because the consequences of such errors are costly, and have to be borne by the public. When the service is inadequate and the rates too high, the public has to bear the inconvenience and to foot the bill. Standards of service that are too high and rates for the same that are unreasonably low are certain to keep capital and business ability away from the public utility, and the public will then have to suffer from lack of service or necessary extensions thereto. Those who have had actual experience in all phases of this work know only too well that it is about as easy to



go too far in one of these directions as in the other, and that excess in either case is contrary to public policy. In addition to this, the work involved in regulation is complicated, and unless carried on on a large scale, relatively very costly. It is for reasons of this kind that it appears to many that proper regulation is as yet out of reach to all but the larger cities unless it is performed by the state or on some other coöperative basis.